

**I. List 3-5 Student Learning Outcomes for students enrolled in your program.**

*These should be broad overarching learning goals. They are bigger than objectives.*

Transfer students:

1. Students will learn to solve problems like professionals in the Physical Sciences and Engineering.
2. Students will have the knowledge of physics and the scientific method as well as the analytical thinking skills required to succeed at four year universities and professional schools.
3. Students will have the laboratory and communication skills required to succeed at four year universities and professional schools.

GE students:

1. Students will understand the scientific method as applied in Physics and Astronomy.
2. Students will have an understanding of the basic concepts of Astronomy or Physics as appropriate.
3. Students will have an on-going interest in science and an appreciation for the beauty and wonder of our physical world and beyond.

**II. Align the Program Level SLOs with the College Goals.**

*Briefly discuss how your program meets the goals of the college.*

The outcomes listed above are all aligned with and are critical for meeting College Goal I: Educational Excellence.

**II. Assess the student success in your program.**

*How do you know students learned the core SLOs by the completion of curriculum/program. Include data to support these findings.*

Transfer Students:

1. Students successfully answering questions on exam that they have never seen before requiring knowledge of physics and the scientific method as well as the analytical thinking skills. It is imperative that the instructor never "teach to test" to provide this assessment.
2. Student lab reports and the instructor's observations of the students during labs provide proof that students will have the laboratory and communication skills required.

Student success in second and third semester Physics classes are proof that the core SLOs are achieved. Our success rate exceeds the statewide average by 4% and meets or exceeds that of COM average overall.

Student success in the advanced engineering classes such as Engg 245 and Engg 220. These SLOs are critical for success in these classes and the faculty in Engineering report students enter these classes well prepared.

Student success in transfer to four year universities and achievement of a BS degree will be the most important assessment possible.

GE students:

Expand use of a set of exam questions to test knowledge of the scientific method as applied in Physics and Astronomy to all sections.

Provide and review student surveys at end of every semester.

**IV. Document student success/achievement in the program.**

*Possible documentation materials might include Degrees, Awards, Transfer, Portfolios, Capstone Assignments, Success in Job Placement, etc.)*

The vast majority of students passing second and third semester Physics 207 are accepted to four year universities. Those who visit COM after leaving report being well prepared for upper division work. We need to begin a more reliable and objective way of measuring this.

**V. Note areas for future improvement.**

*Address needs of program like curricular innovation, resource allocation, upgrading facilities, technology, unit allocation, staffing, etc.*

Transfer success: We need to begin tracking both the successful transfer rate as well as achievement of a BS degree by our former students.

Success in advanced Engineering classes at COM: We need to develop a more reliable and objective way of measuring this.

Laboratory Equipment needs: Physics has suffered from being grossly underfunded for equipment and supplies over the last 20 years. A list of urgently needed equipment has been compiled as part of program review. We need to buy more equipment and supplies to provide a safe, productive learning environment for our students.

Smart Class room needs: We need more smart class rooms to provide a better learning environment.

Staffing: We need to hire an additional full time physics and astronomy instructor. Full time instructors are more available for students and can do more outreach to local schools, more data collection for documenting student success, etc. There is currently only one full time faculty member in Physics and Astronomy and six part time faculty.

College of Marin Program Review Student Learning Outcomes • SL I v.1 February 2008